

Date: Monday, 28/04/2008 9:08:20 AM  
User: Linda Lacelle

# Process Sheet

<b>Customer</b> : CU-DAR001 Dart Helicopters Services	<b>Drawing Name</b> : A119 BUBBLE WINDOW
<b>Job Number</b> : 38829A	
<b>Estimate Number</b> : 12911	
<b>P.O. Number</b> :	<b>Part Number</b> : D36242
<b>This Issue</b> : 28/04/2008 <b>S.O. No.</b> :	<b>Drawing Number</b> : D3624 REV. D
<b>Prsht Rev.</b> : NC	<b>Project Number</b> : N/A
<b>First Issue</b> : / / <b>Type</b> : THERMOFORMING	<b>Drawing Revision</b> : REV. D
<b>Previous Run</b> : 37199A	<b>Material</b> :
<b>Written By</b> :	<b>Due Date</b> : 28/04/2008 <b>Qty:</b> 2 <b>Um:</b> Each
<b>Checked &amp; Approved By</b> :	
<b>Comment</b> : Est. A Thermoform in house 6/27/2007 DL	
Est. B. Revised due to corrupt operating Program. 7/23/2007 DL	
Est. C. Dwg. Rev. change 7/30/2007	
Est. D. Dwg. Rev. Updated 4/25/2008	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
1.0	MACRYLICS177	0.177" PLEXIGLAS G CLEAR CAST ACRYLIC SH



**Comment:** Qty.: 10.0000 sf(s)/Unit Total : 20.0000 sf(s)  
0.177" PLEXIGLAS G CLEAR CAST ACRYLIC SH

1) Batch # M107291

2.0	HAND FINISH TH	HAND FINISHING THERMOFORMING
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**Comment:** HAND FINISHING THERMOFORMING

1) Cut Blanks to 30" by 48"

08/04/28 BB X2

3.0	THERMOFORMING	THERMOFORMING MACHINE
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**Comment:** THERMOFORMING MACHINE

Thermoform as per Dwg. D3624 and Folio FTA 004

Dwg. Rev. D  
Folio Rev. E

Dr.  
08/04/28.

4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
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**Comment:** INSPECT PARTS AS THEY COME OFF MACHINE

1) Check Surface finish for undesired marks, voids, dimples etc.

2) Check depth of bubble to ensure conformity to drawing tolerances.

Dr.  
08/04/28.

W/O:		WORK ORDER CHANGES								
DATE	STEP	PROCEDURE CHANGE				By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3624-2 PAR #: PLN Fault Category: Roll Thermoform NCR: Yes No DQA: D Date: 08/04/29  
 QA: N/C Closed: D Date: 08/04/29

NCR: 38829A		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
08.04.28	5.	Did not turn properly. Vacuum valve open too much. (X1)	<i>[Signature]</i> 08/04/28	Scrap & Replace. B6 107281	<i>[Signature]</i> 08.04.28	<i>[Signature]</i> 08/04/28	<i>[Signature]</i> 08/04/28	<i>[Signature]</i> 08/04/28
08.04.28	5.	Cracked white trimming Very small crack. (X1)	<i>[Signature]</i> 08/04/28	Save for R&D to replace show unit. Replace this unit for work order B 107281	<i>[Signature]</i> 08.04.28	<i>[Signature]</i> 08/04/28	<i>[Signature]</i> 08/04/28	<i>[Signature]</i> 08/04/28

NOTE: Date & initial all entries

Date: Monday, 28/04/2008 9:08:20 AM  
User: Linda Lacelle

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: A119 BUBBLE WINDOW

Job Number: 38829A

Part Number: D36242

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

HAND FINISH TH

HAND FINISHING THERMOFORMING



Comment: HAND FINISHING THERMOFORMING

- 1) Trim to Finished Dimensions
- 2) Buff out any light scratches or blemishes
- 3) Etch in part number and batch number

DL, 08.04/28

6.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

DL 08.04.28,

7.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

- 1) Visually inspect for clarity, and proper formation.

200/01/28 (2)

8.0

PACKAGING 1

PACKAGING RESOURCE #1



38829



SV 2x

Comment: PACKAGING RESOURCE #1

8/4/28

9.0

QC21

FINAL INSPECTION/W/O RELEASE



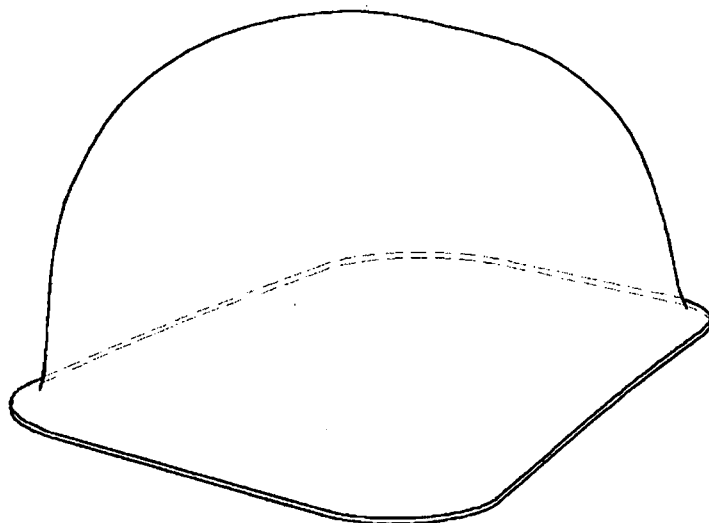
08/04/28

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mf 08-04-28



D3624-2 BUBBLE WINDOW

**NOTES:**

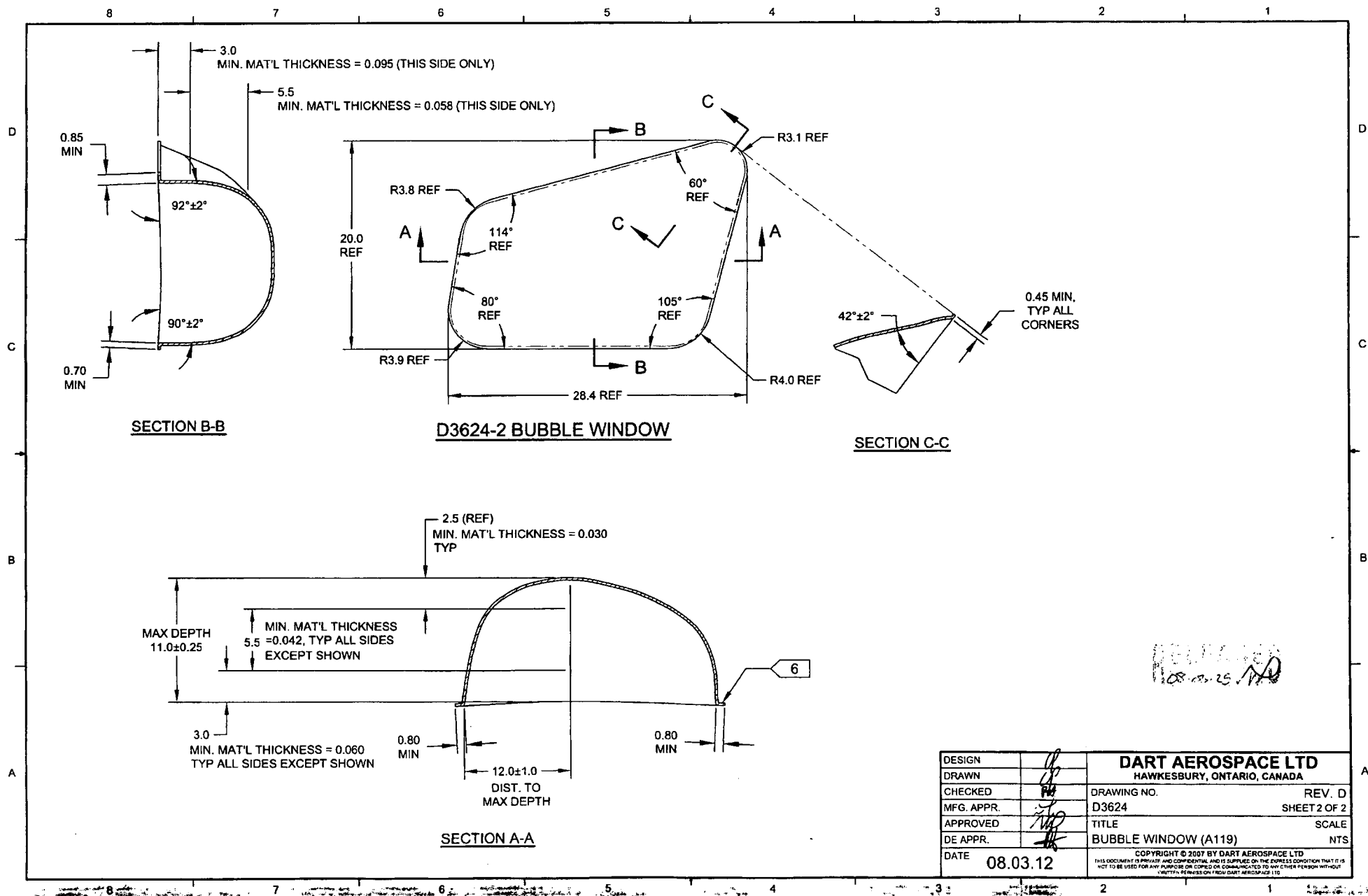
- 1) MATERIAL: PLEXIGLAS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C  
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425  
0.177 TO 0.188 THICK (STOCK, REF DART SPEC M-ACRYLIC-S)
  - 2) FINISH: NONE
  - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
  - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
  - 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
  - 6) IDENTIFICATION: ENGRAVE P/N & B/N ON FLANGE WITHIN 0.25" OF BUBBLE. USE 0.125" LETTERS TO MAX DEPTH OF 0.005".
  - 7) WEIGHT: 2.95 lbs
  - 8) FORM PER DT8953 AND QSI 022
- FORMING PROCESS: (a) DRAPE OVER DT8953 MOLD  
(b) HEAT TO 290°F  
(c) VACUUM FORM TO SPECIFIED HEIGHT  
(d) LET COOL TO AT LEAST 100°F BEFORE HANDLING  
(e) TRIM FLANGE USING DT8954

D	REDRAW, REFORMAT, RMV SHAPE TOOL, ADD SEC B-B (2C8) & C-C (2C3), ADD FLANGE & WALL & WALL ANGLE DIMS, UPDATE MATL SPEC (1B8)	CP	08.03.12
C	ADD TOOL TO CONTROL BUBBLE SHAPE	CP	07.06.27
B	11.0" DEPTH WAS 12.0"	CP	07.05.24
A	NEW ISSUE	CP	07.06.27
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	08.03.12		

**DART AEROSPACE LTD**  
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D3624  
TITLE BUBBLE WINDOW (A119)  
SCALE NTS  
REV. D SHEET 1 OF 2

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DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3624	SHEET 2 OF 2
APPROVED		TITLE	SCALE
DE APPR.		BUBBLE WINDOW (A119)	NTS
DATE	08.03.12	COPYRIGHT © 2007 BY DART AEROSPACE LTD	
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DART AEROSPACE LTD	WORK ORDER:	35829A
Description: <u>119 WINDOW</u>	Part Number:	53624-2
Inspection Dwg: <u>03624</u> Rev: <u>D</u>		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

(Step 4) Thermoforming  
Visual Inspection Sign-off

Description	Initials
Depth of bubble within tolerances	DL
Acceptable shape definition	DL
Free of visual flaws (bumps, cracks, voids, etc.)	DL

### (Step 6) Trimming FAI Checklist

Inspect dimensions highlighted on inspection sheet drawing \_\_\_\_\_ Rev. \_\_ and record below

Drawing	Tolerance	Actual	Accept	Reject	Method of Inspection	Comments
Dimension		Dimension				
depth of bubble 11"	+/- 0.25"	10.875	✓		TAPE	
leading edge at 3" high	0.095" min thick	0.111	✓		US	
leading edge at 8.5" high	0.058" min. thick	0.065	✓		US	
trailing edge at 3" high	0.060" min thick	0.108	✓		US	
trailing edge at 8.5" high	0.042" min thick	0.059	✓		US	
top 2.5" of bubble	0.030" min thick	0.042	✓		US	
leading edge angle 92°	+/- 0.2°	89°	✓		Protractor	
trailing edge angle 90°	+/- 0.2°	89°	✓		Protractor	
width leading edge flange	0.85" min	0.93"	✓		Caliper	
width training edge flange	0.70" min.	0.87"	✓		Caliper	

Measured by: <u>DL</u>	Audited by: <u>S</u>	Prototype Approval: <u>DL</u>
Date: <u>08/04/28</u>	Date: <u>08/04/28</u>	Date: <u>08/04/28</u>

Rev	Date	Change	Revised by	Approved
		New Issue		

DART AEROSPACE LTD	WORK ORDER: 38828A
Description: A119 Bubble Window.	Part Number: D3624-2
Inspection Dwg: D3624 Rev: D	Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

(Step 4) Thermoforming  
Visual Inspection Sign-off

Description	Initials
	Wh
Depth of bubble within tolerances	Wh
Acceptable shape definition	Wh
Free of visual flaws (bumps, cracks, voids, etc.)	

### (Step 6) Trimming FAI Checklist

Inspect dimensions highlighted on inspection sheet drawing \_\_\_\_\_ Rev. \_\_ and record below

Drawing	Tolerance	Actual	Accept	Reject	Method of	Comments
Dimension		Dimension			Inspection	
depth of bubble 11"	+/- 0.25"	10.75"	✓		TAPE	
leading edge at 3" high	0.095" min thick	0.097	✓		US	
leading edge at 8.5" high	0.058" min. thick	0.076	✓		US	
trailing edge at 3" high	0.060" min thick	0.082	✓		US	
trailing edge at 8.5" high	0.042" min thick	0.057	✓		US	
top 2.5" of bubble	0.030" min thick	0.033	✓		US	
leading edge angle 92°	+/- 0.2°	90°	✓		Pro	
trailing edge angle 90°	+/- 0.2°	89°	✓		Pro	
width leading edge flange	0.85" min	0.093	✓		Caliper	
width training edge flange	0.70" min.	0.082	✓		Caliper	

Measured by: Wh	Audited by: G	Prototype Approval: P
Date: 08.04.28	Date: 08/04/28	Date: 08.04.28

Rev	Date	Change	Revised by	Approved
		New Issue		